Claims

1. A method for synchronizing a radio communication system divided into radio cells (FZ1, ..., FZ3) wherein data is transmitted by means of multiple access methods and wherein each radio cell (FZ1, ...) has a base station (BTS1, ..., BTS3) for radio provisioning a plurality of mobile stations (T11, ..., T33) assigned to the radio cell (FZ1, ...), **characterized in that**
   - alongside mobile station signals of its own radio cell (FZ1), a base station (BTS1) also receives mobile station signals from adjacent radio cells (FZ2, FZ3), and
   - from the received mobile station signals the base station (BTS1) determines a synchronizing value for time synchronizing and/or frequency synchronizing with which the base station (BTS1) synchronizes itself.

2. The method according to claim 1, characterized in that
   - alongside base station signals of its own radio cell (FZ1), a mobile station (T13) also receives base station signals from adjacent radio cells (FZ2, FZ3), and
   - from the received base station signals the mobile station (T13) determines a synchronizing value for time synchronizing and/or frequency synchronizing from the received base station signals with which the mobile station (T13) synchronizes itself.

3. The method according to claim 1 or 2, characterized in that adjacent base stations (BTS1, BTS2, BTS3) employ radio transmission resources from a stock commonly assigned to the base stations (BTS1, ...) for data transmission.

4. The method according to claim 3, characterized in that the

base stations (BTS1, ...) employ timeslots (TS1, ...) of commonly assigned carrier frequencies (f1, ..., f12) as radio transmission resources.

5. The method according to claim 3 or 4, characterized in that at least two adjacent base stations (BTS1, BTS3) simultaneously and jointly employ a timeslot (TS5) of a carrier frequency (f5) for radio provisioning a respectively assigned mobile station (T14, T32) and the timeslot (TS5) is selected from the commonly assigned radio transmission resources taking account of an interference situation in the timeslot (TS5).

6. The method according to one of the preceding claims, characterized in that, for synchronizing, the base station and/or mobile station adjust(s) carrier frequencies and timeslot-transmitting instants employed.

7. The method according to one of the preceding claims, characterized in that co-channel interference is reduced on the base station and/or mobile station by means of interference suppression methods.

8. The method according to one of the preceding claims, characterized in that radio transmission resources are assigned on the base station side in such a way that co-channel interference on adjacent radio cells is minimized.

9. The method according to one of the preceding claims, characterized in that an OFDM radio transmission method is employed.

10. The method according to one of the preceding claims, characterized in that a TDD or FDD radio transmission

method is employed.

11. The method according to claim 9, characterized in that a time deviation is determined through correlating and a frequency deviation is determined by ascertaining a phase rotation of consecutive symbols following a transformation into the frequency range.

12. The method according to one of the preceding claims, characterized in that the radio communication system is synchronized with no additional signaling using a higher protocol layer between the base station and assigned mobile station.

13. A base station, characterized by means for implementing the method according to one of claims 1 to 12.

14. A mobile station, characterized by means for implementing the method according to one of claims 2 to 12.

15. A radio communication system, characterized by at least one base station according to claim 13.

16. A radio communication system, characterized by at least one mobile station according to claim 14.